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QUALCOMM INCORPORATED
5775 MOREHOUSE DR.
SAN DIEGO, CA 92121

EXAMINER	
MALEK, LEILA	

ART UNIT	PAPER NUMBER
2611	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

us-docketing@qualcomm.com
kascanla@qualcomm.com
nanm@qualcomm.com

Office Action Summary	Application No.	Applicant(s)	
	10/821,585	KHANDEKAR ET AL.	
	Examiner	Art Unit	
	LEILA MALEK	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 November 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-34* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-32* is/are rejected.

7)☒ Claim(s) *33 and 34* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *09 April 2004* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed on 11/24/2008, regarding Fig.1 being a novel feature of the current invention has been fully considered but it is not persuasive. Examiner asserts that in paragraph 0034 of invention's disclosure; Applicant states that Fig. 1 is a symbolic representation of the data detection for a hierarchical coded data transmission. Furthermore, the main features of Fig. 1 have been disclosed in paragraph 0004 of invention's disclosure which is part of the background of invention. Applicant needs to specify which part of Fig. 1 is a novel feature of the present invention.

2. Applicant's arguments with respect to claims 1-19, 22-24, and 27-34 have been considered but are moot in view of the new ground(s) of rejection.

3. Applicant's argument, regarding claim 20, (see page 16 of remarks) has been fully considered but it is not persuasive. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., uncoded data symbol estimates are found by subtracting interference estimates from the received symbols) are not recited in the rejected claim. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Drawings

4. Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in

compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance. According to invention's disclosure (see paragraphs 0004, 0011, and 0034, Fig. 1 is a symbolic representation of the data detection for a hierarchical coded data transmission. Since this figure is not part of Applicants' invention it should be labeled as prior art.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 22-24 and 27-30 rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. As to claim 22, Applicant in invention's disclosure fails to disclose that the second data stream is combined with the first data stream to produce an enhanced decoded data stream. Applicant in drawings shows that multiplexer passes either LLR_b which is the output of base stream LLR computation unit or LLR_e which is the output of enhancement stream LLR computation unit. Therefore Applicant fails to disclose how an

enhanced decoded data stream has been provided by the combination of first and second data streams in a way to enable one skilled in the art to use the same method. As to claim 27, Applicant in invention's disclosure fails to disclose that the second data stream is combined with the first data stream to provide an enhanced data symbol estimates. Applicant in drawings shows that multiplexer passes either LLR_b, which is the output of base stream LLR computation unit, or LLR_e, which is the output of enhancement stream LLR computation unit. Therefore Applicant fails to disclose how an enhanced data stream estimates has been provided by the combination of first and second data streams in a way to enable one skilled in the art to use the same method. As to claim 28, Applicant fails to disclose that the information from the adjusted unit is combined with data from the decision unit to form estimates of enhancement data symbols. In Fig. 5, Applicant teaches that Mux passes either LLR_e or LLR_b, therefore Applicant does not show/disclose using a combination of the information from the adjustment unit and the data from the decision unit to form estimates of enhancement data symbols in a way to enable one skilled in the art to use the same method.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1, 3, 5-7, 9, 11, 12, 14-16, 18, and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable Gamal et al. (hereafter, referred as Gamal) (US

6,671,338), in view of Claussen et al. (hereafter, referred as Claussen) (US 2004/0038653).

As to claims 1 and 16, Gamal discloses a method/apparatus for: deriving initial estimates for code bits of a first data stream based on received symbols for a data transmission (see Fig. 7, outputs of matched filter 132, and column 2, lines 41-42); computing a decoded base stream based on the initial estimates for code bits of the first data stream (see decoder 150); estimating interference due to the first data stream based on the decoded base stream (see the abstract and column 2, lines 42-46); deriving- enhancement LLRs enhancing the decoded base stream by subtracting the estimated interference due to the first data stream from the initial estimates for the code bits of the first data stream (see column 2, lines 46-49 and columns 10 and 11) and computing a decoded enhancement stream (see the output of decoder 150 after iteration) based on the enhancement LLRs (see column 2, lines 49-50). Gamal discloses all the subject matters claimed in claim 1, except that the outputs of matched filter (the initial estimates) are log-likelihood ratios. Claussen, in the same field of endeavor, discloses an interference cancellation method wherein a matched filter 3 is used to provide soft-outputs (see paragraph 0083), which are LLR values (see paragraph 0064), to decoder 13. Since LLR approximation method having advantages of the low system complexity and low deterioration of performance it would have been obvious to one of ordinary skill in the art at the time of invention to modify Gamal to use LLR values to represent initial estimates of the received signal.

As to claim 12, Gamal discloses an apparatus (see Fig. 7), comprising; a first computation unit operative to derive initial estimates for code bits of a first data stream based on received symbols for a data transmission (see Fig. 7, outputs of matched filter 132, and column 2, lines 41-42); modules configured to compute a decoded base stream (see the output of decoder 150) based on the initial estimates for code bits of the first data stream received from the first computation unit; an interference estimator operative to estimate interference due to the first data stream based on the decoded base stream (see column 2, lines 44-46); a second computation unit (see block 144 and column 2, lines 46-49) operative to derive enhancement LLRs by subtracting the estimated interference due to the first data stream from the initial estimates for the code bits of the first data stream (see columns 10 and 11); and modules configured to compute a decoded enhancement stream based on the enhancement LLRs (see block 150). Gamal discloses all the subject matters claimed in claim 12, except that the outputs of matched filter (the initial estimates) are log-likelihood ratios. Claussen, in the same field of endeavor, discloses an interference cancellation apparatus wherein a matched filter 3 is used to provide soft-outputs (see paragraph 0083), which are LLR values (see paragraph 0064), to decoder 13. Since LLR approximation method having advantages of the low system complexity and low deterioration of performance it would have been obvious to one of ordinary skill in the art at the time of invention to modify Gamal to use LLR values to represent initial estimates of the received signal.

As to claim 31, Gamal discloses an apparatus for a wireless communication system (see Fig. 7 and the abstract), comprising; means for deriving initial estimates

for code bits of a first data stream based on received symbols for a data transmission (see Fig. 7, outputs of matched filter 132, and column 2, lines 41-42); means for estimating interference due to the first data stream based on the data symbol estimates; means for deriving LLRs for code bits of a second data stream (i.e. the stream after noise cancellation has been performed on it) based on the received symbols and the estimated interference (see column 2, lines 39-49 and columns 10-11); and means for computing a decoded enhancement stream based on the LLRs for code bits of the second data stream (see decoder 150 after at least first iteration). Gamal discloses all the subject matters claimed in claim 31, except that the outputs of matched filter (the initial estimates) are log-likelihood ratios. Furthermore, Gamal does not expressly disclose means for deriving uncoded data symbol estimates for the first data stream based on the received symbols; means for estimating interference due to the first data stream based on the uncoded data symbol estimates. Claussen, in the same field of endeavor, discloses an interference cancellation apparatus wherein a matched filter 3 is used to provide soft-outputs (see paragraph 0083), which are LLR values (see paragraph 0064), to decoder 13. Since LLR approximation method having advantages of the low system complexity and low deterioration of performance it would have been obvious to one of ordinary skill in the art at the time of invention to modify Gamal to use LLR values to represent initial estimates of the received signal. Furthermore, Claussen discloses means for deriving uncoded data symbol estimates for the first data stream based on the received symbols (uncoded data symbols in light of Applicant's invention disclosure have been interpreted as hard decision estimates of

the received signal) (see the abstract and paragraph 0006) and means for estimating interference due to the first data stream based on the uncoded data symbol estimates (see paragraph 0047 and Fig. 2). It would have been obvious to one of ordinary skill in the art at the time of invention to modify Gamal as suggested by Claussen to perform interference estimation and cancellation based on the hard decision estimates of the received signal to perform the interference estimation and cancellation more accurately (see paragraph 0048).

As to claims 3, 14, 18, Gamal further shows the detected symbols are derived from the received symbols in real-time without buffering the received symbols (see Fig. 7).

As to claim 5, Gamal discloses that QPSK is used for both the first and decoded enhancement data streams (see column 4, lines 37-39).

As to claim 6, as explained above, Claussen discloses deriving received symbol estimates based on the LLRs for the code bits of the first data stream (see paragraphs 0064 and 0083) and Gamal discloses that the enhancement LLRs are derived based on the received symbol estimated and the estimated interference (see columns 2, 10, and 11).

As to claim 7, Gamal, discloses that deriving received symbol estimates includes forming at least one equation (see column 10, line 25) for each received symbol (see column 10, line 10) based on LLRs for all code bits of a data symbol carried in the received symbol for the first data stream (see column 10, lines 7-25). Although Gamal only shows one formula which is L^{I}, however it would have been

obvious to one or ordinary skill in the art at the time of invention to calculate L^Q in the same manner to estimate a^Q. Gamal further discloses that received symbol estimate is derived from the equation(s) (i.e. the output of MMSE filter 144 see column 2, lines 61-63 and columns 10 and 11). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention, to use two formulas to estimate the whole QPSK symbol.

As to claims 9 and 15, Gamal further discloses deriving channel gain estimates (channel information) for a wireless channel used for the data transmission (see the abstract) (see the output of matched filter), wherein the initial estimates for the code bits of the first data stream, enhancement LLRs and the interference due to the first data stream are derived with the channel gain estimates (see Fig. 7).

As to claim 11, Claussen discloses that the wireless communication system utilizes orthogonal frequency division multiplexing (OFDM), and wherein the received symbols are from a plurality of sub-bands (see paragraph 0070). It would have been obvious to one of ordinary skill in the art at the time of invention to use OFDM technique to take advantage of a higher spectral efficiency.

7. Claims 20, 21,and 25, are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's background of invention, in view of Bjerke et al. (hereafter, referred as Bjerke) (US 2003/0103584).

As to claim 20, Applicant in the background of invention discloses a method of performing data detection in a wireless communication system (see paragraphs 0003-0004 and Fig. 1), comprising: detecting code bits of a first data stream based on

received symbols for a data transmission (see block 172); deriving uncoded ("uncoded" in view of lack of any further description by the Applicant has been interpreted as decoded) data symbol estimates for the first data stream based the detection results for the first data stream (see decoder 182); computing a decoded stream based on the detected symbols of the first data stream using a set of modules (see blocks 182 and 186); estimating interference due to the first data stream based on the uncoded data symbol estimates (see block 174); and detecting code bits of a second data stream based on the received symbols and the estimated interference (see detector 176); wherein the second data stream is provided to the modules (see decoder 186) to produce an enhanced decoded data stream. Applicants in the background of invention disclose all the subject matters claimed in claim 20, except that detecting code bits of a first and second data streams comprises deriving log-likelihood ratios (LLRs) for code bits. Bjerke, in the same field of endeavor, discloses a technique to detect and decode data transmitted in a wireless system (see the abstract and Fig. 4c, blocks 452a and 452b). Bjerke further discloses that the detector computes the LLRs for each transmitted coded bit and obtains soft-decision symbols (see paragraph 0105). It would have been obvious to one of ordinary skill in the art at the time of invention to modify the background of invention as suggested by Bjerke to represent the detected symbols more conveniently (see Bjerke paragraph 0087).

As to claim 21, Bjerke discloses that the uncoded data symbol estimates are derived by making hard decisions on the LLRs for the code bits of the first data stream (see paragraph 0161). It would have been obvious to one of ordinary skill in the art at

the time of invention to modify Applicants' background of invention as suggested by Bjerke to further remove the interference from the received signal.

As to claim 25, Applicants in the background of invention further show the detected symbols are derived from the received symbols in real-time without buffering the received symbols (see Fig. 1).

8. Claims 2, 13, 17, and 32, are rejected under 35 U.S.C. 103(a) as being unpatentable Gamal and Claussen, further in view of Lozano (US 2003/0076797).

As to claims 2, 13, and 17, Gamal further discloses decoding the initial estimates for the code bits of the first data stream to obtain decoded data for the first data stream (see the output of decoder 150). Gamal and Claussen disclose all the subject matters claimed in claims 2, 13, and 17, except for re-encoding and remodulating the decoded data to obtain remodulated symbols for the first data stream, wherein the interference due to the first data stream is estimated based on the remodulated symbols. Lozano, in the same field of endeavor, discloses an interference cancellation method, wherein a MMSE filter with successive decoding and cancellation 137 successively decodes each of the constituent sub-streams and then re-encodes, reconstructs (has been interpreted as re-modulation), and cancels its interference contribution in order to facilitate the decoding of the remaining sub-streams (see paragraph 0021). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify Gamal and Claussen as suggested by Lozano to cancel the interference more effectively and facilitate the decoding of the data stream.

As to claim 32, Gamal further discloses adjusting (updating) the LLRs for the code bits of the second data stream based on the decoded data and the data symbol estimates for the first data stream (see column 10, lines 20-29). Gamal and Claussen disclose all the subject matters claimed in claim 32, except for re-encoding and remodulating the decoded data to obtain remodulated symbols for the first data stream. Lozano, in the same field of endeavor, discloses an interference cancellation method, wherein a MMSE filter with successive decoding and cancellation 137 successively decodes each of the constituent sub-streams and then re-encodes, reconstructs (has been interpreted as re-modulation), and cancels its interference contribution in order to facilitate the decoding of the remaining sub-streams (see paragraph 0021). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify Gamal and Claussen as suggested by Lozano to re-encode and re-modulate the decoded data prior to interference cancellation (and therefore prior to updating the soft estimate (LLR) values) to cancel the interference more effectively and facilitate the decoding of the data stream.

9. Claims 4 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gamal and Claussen, further in view of Maru (US 6,516,444).

As to claims 4 and 19, Gamal and Claussen disclose all the subject matters claimed in claims 1 and 16, except for storing the LLRs for the code bits of the first data stream in a buffer; and storing the enhancement LLRs in the buffer by overwriting the LLRs for the code bits of the first data stream. Maru discloses a turbo decoder apparatus (see Fig. 9), wherein previous information LOG likelihood and extrinsic

information LOG likelihood are alternatively stored in a priori memories 103-1 and 103-2 (see Fig. 1). Maru further discloses that when one memory is used for a read as a previous information LOG likelihood memory, the other memory is used for a write as an extrinsic information LOG likelihood memory. In the next cycle, the memory used as a previous information LOG likelihood memory is overwritten as an extrinsic information LOG likelihood memory, and the memory used as an extrinsic information LOG likelihood memory is used for a read as a previous information LOG likelihood memory. It would have been obvious to one of ordinary skill in the art at the time of invention to modify Gamal and Claussen as suggested by Maru to reduce the number of buffers in the system by overwriting the recent information on the previous ones and make the system less costly.

10. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's background of invention and Bjerke et al., further in view of Maru (US 6,516,444).

As to claims 26, Applicants' background of invention and Bjerke disclose all the subject matters claimed in claim 20, except for storing the LLRs for the code bits of the first data stream in a buffer; and storing the enhancement LLRs in the buffer by overwriting the LLRs for the code bits of the first data stream. Maru discloses a turbo decoder apparatus (see Fig. 9), wherein previous information LOG likelihood and extrinsic information LOG likelihood are alternatively stored in a priori memories 103-1 and 103-2 (see Fig. 1). Maru further discloses that when one memory is used for a read as a previous information LOG likelihood memory, the other memory is used for a write

as an extrinsic information LOG likelihood memory. In the next cycle, the memory used as a previous information LOG likelihood memory is overwritten as an extrinsic information LOG likelihood memory, and the memory used as an extrinsic information LOG likelihood memory is used for a read as a previous information LOG likelihood memory. It would have been obvious to one of ordinary skill in the art at the time of invention to modify Applicant's background of invention and Bjerke as suggested by Maru to reduce the number of buffers in the system by overwriting the recent information on the previous ones and make the system less costly.

11. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gamal and Claussen, further in view of Bjerke (US 2003/0103584).

As to claim 8, Gamal and Claussen disclose all the subject matters claimed in claim 8, except that the LLRs for code bits if the first data stream and enhancement LLRs are derived based on a dual-max approximation. Bjerke, in the same field of endeavor, discloses a technique to detect and decode data transmitted in a wireless system (see the abstract and Fig. 4c). Bjerke further discloses that the detector computes the LLRs for each transmitted coded bit and obtains soft-decision symbols (see paragraph 0105). Bjerke further discloses that the LLRs for the code bits of the first and second data streams (i.e. the interference cancelled stream) are derived based on a dual-max approximation (see paragraphs 0010 and 0137). It would have been obvious to one of ordinary skill in the art at the time of invention to use dual-maxima approximation in the system to reduce the computational complexity of signal estimation.

12. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable Gamal and Claussen, further in view of Applicant's background of invention.

As to claim 10, Gamal discloses that channel coding technique has been used in the system (see column 13, lines 43), however, Gamal and Claussen does not expressly disclose that the first data stream is a base stream and the decoded enhancement stream is an enhancement stream for a hierarchical coded (channel coded) data transmission. Applicant in the background of invention discloses that in channel coding technique the broadcast data may be divided into a base stream and an enhancement stream (see paragraph 0003). Applicant in the background of invention further discloses that to recover a hierarchical coded data transmission, a receiver first detects and recovers the base stream by treating the enhancement stream as noise. The receiver then estimates and cancels the interference duo to the base stream. The receiver thereafter detects and recovers the enhancement stream with the interference from the base stream cancelled. It would have been obvious to one of ordinary skill in the art at the time invention to use the teachings of Gamal and Claussen to recover a hierarchical coded data transmission to reduce the complexity of interference cancellation (see Gamal, column 2, lines 23-27) and provide a low site cost receiver (see the abstract of Gamal).

Allowable Subject Matter

13. Claims 33 and 34 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LEILA MALEK whose telephone number is (571)272-8731. The examiner can normally be reached on 9AM-5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on 571-272-3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Leila Malek
Examiner
Art Unit 2611

/L. M./
/Leila Malek/
Examiner, Art Unit 2611

/Mohammad H Ghayour/
Supervisory Patent Examiner, Art Unit 2611